



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
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DEC 20 2011

Ref: EPR-N

Mr. Paul Bradford, Supervisor  
Kootenai National Forest  
31374 U.S. Highway 2 West  
Libby, Montana 59923-3022

Mr. Richard Oppen, Director  
Montana Department of Environmental Quality  
P.O. Box 20091  
Helena, Montana 59620-0901

Re: Supplemental Draft Environmental  
Impact Statement for the Montanore  
Project (CEQ #20110332)

Dear Mr. Bradford and Mr. Oppen:

This letter is written in response to the U.S. Forest Service Kootenai National Forest (KNF) and Montana Department of Environmental Quality (MDEQ) Supplemental Draft Environmental Impact Statement (SDEIS) for the Montanore Project (Project). The U.S. Environmental Protection Agency, Region 8 (EPA) is committed to working with you in the coming months, while the U.S. Fish and Wildlife Service (FWS) prepares the Biological Opinion for the Project, to address the concerns we have identified regarding the impacts of the Project and the analysis of those impacts, before issuance of the Final Environmental Impact Statement (FEIS) and the Record of Decision (ROD).

The KNF and MDEQ have made significant improvements to the analyses since the DEIS and we appreciate the workgroup discussions that have resolved many of our concerns on the DEIS. The new information included in the SDEIS better characterizes potential impacts of the project. For example, the SDEIS includes results from modeling groundwater and surface hydrologic effects that were not previously disclosed in the DEIS. The EPA appreciates the opportunity we have had to participate on several technical workgroups with KNF and MDEQ to develop some of this additional information. Since release of the SDEIS, we have spoken a number of times with the KNF, MDEQ, the FWS, and the U.S. Army Corps of Engineers (Corps) about concerns that have arisen from disclosure of the additional, improved impact analyses in the SDEIS. As recently discussed, given our mutual concerns for the protection of environmental resources in this area, we would like to work together to explore options for reducing significant project impacts and identify the additional information necessary to ensure complete disclosure in the FEIS. The EPA has a number of concrete suggestions that may avoid or reduce many of the impacts associated with the project. We are committed to working together to develop a mitigation plan that will reduce and offset impacts to resources, including surface water, aquatic resources, groundwater and wetlands.

The EPA provides its review of the SDEIS in accordance with our responsibilities and authority under Section 102(2)(C) of the National Environmental Policy Act (NEPA), 42 U.S.C. Section 4332(2)(C), Section 309 of the Clean Air Act (CAA), 42 U.S.C. Section 7609, and Clean Water Act (CWA) §404. The level of detail in this letter is intended to clearly articulate our concerns, identify options that may reduce and mitigate impacts relative to our concerns, and facilitate future dialogue to resolve outstanding issues as we work through the CWA §404 regulatory requirements with Montanore Mineral Corporation (MMC) and the Corps.

## **Background**

The Project is an underground copper and silver mine proposed underneath the Cabinet Mountains Wilderness Area in the Kootenai National Forest in northwestern Montana. The SDEIS evaluates three action alternatives and a no action alternative. KNF and MDEQ have identified Alternative 3, the Agency Mitigated Poorman Impoundment Alternative as their preferred alternative. The KNF and MDEQ have made a positive step by selecting a less environmentally damaging preferred alternative than was identified in the DEIS. The Project as proposed by the proponent, MMC, is Alternative 2.

## **Major Comments and Recommendations**

Based on our review of the SDEIS and the new information provided therein, we are concerned about predicted alteration of water quantity and its consequent impacts on aquatic life and wetlands. The SDEIS also projects adverse impacts to surface water quality and groundwater quality about which we are concerned. Along with an explanation of the nature of EPA's concerns, we offer recommendations on how KNF and MDEQ might reduce or avoid impacts. The enclosed "Detailed Comments" provide additional specifics regarding these issues as well as recommendations (see Attachment).

### **A. Water Quantity & Aquatic Life**

#### ***1. Streams - Incomplete Disclosure of Impacts and Mitigation***

The 3D groundwater modeling that was added to the SDEIS predicts large reductions in groundwater levels resulting from mine construction and operation that will lead to substantial reductions in stream baseflow. The EPA is concerned that the drawdown will have significant and potentially irreversible or irretrievable impacts on aquatic ecosystems that are not fully characterized or mitigated in the SDEIS. The SDEIS predicts the Project will reduce stream baseflow within the Cabinet Mountains Wilderness Area, resulting in up to 1,300 years of seasonal stream dry-up in streams that contain designated critical habitat for a threatened species, the bull trout. Changes to streamflow, water quality and sediment loading outside of the wilderness area will also adversely affect aquatic life in Poorman Creek, Little Cherry Creek and Libby Creek.

The SDEIS discloses for the first time that the Project may cause long-term and permanent flow reductions in East Fork Bull River and East Fork Rock Creek in the Wilderness area, both of which are high-quality CWA §404 jurisdictional streams afforded the highest level of protection under Montana



water quality regulations per their designation as Outstanding Resource Waters. However, there is very limited analysis in the SDEIS regarding the impacts of these reductions on aquatic life. EPA recommends including this analysis in the FEIS for several reasons: 1) these two streams and Libby Creek contain federally designated critical habitat for the threatened bull trout; 2) populations of pure westslope cutthroat trout and interior redband trout, Montana and Forest Service species of concern, reside in these streams and others affected by the mine; and 3) the reductions to baseflow, and consequent reductions to habitat connectivity, availability, and suitability for spawning bull trout or their redds, will likely be most acute during low-flow periods, generally mid-July through March, when bull trout spawn and fish passage is already at its lowest. As the FWS notes in its November 15, 2011 SDEIS comment letter, "the East Fork of Bull River is the single-most important bull trout spawning and rearing stream in the Lower Clark Fork bull trout core area" and "80% of observed bull trout redds in the East Fork of Bull River occur upstream of the wilderness boundary." Our concerns regarding potential impacts to bull trout are consistent with those expressed by the FWS in its letter, which highlights the possibility of serious reductions or extirpation of bull trout populations from the East Fork of Bull River. The SDEIS does not evaluate several potentially effective measures that could address the adverse or unavoidable impacts associated with the large reductions to stream baseflow. This information will likely be needed during the CWA §404 permit review stage.

#### *Recommendations for the FEIS:*

- Quantify the amount of aquatic habitat loss for streams predicted to lose flow due to the project. This analysis could include a physical habitat simulation model (PHABSIM) that quantifies weighted usable habitat area under the various alternatives at a daily or monthly time step. We recommend the analysis include a selection of reaches that represent a range of flow depletions across seasons and discuss impacts to fish passage and fish loss associated with dewatering.
- Identify opportunities to minimize impacts to streamflow in the mine void area, an area where reductions are predicted to be especially severe. Increasing the buffer around the Rock Lake fault beyond 100 feet may help reduce impacts.
- Explore the availability of stream restoration or enhancement as a means to compensate for unavoidable impacts to aquatic life.

#### *2. Rock Lake - Incomplete Characterization of Impacts and Disclosure of Mitigation*

The SDEIS contains new predictions of impacts to Rock Lake that were not disclosed in the 2009 DEIS. Rock Lake is a 58-acre high mountain lake with a mean depth of 30 ft., a maximum depth of 70 ft. and a 1.1 square mile watershed located in the wilderness area. Rock Lake is unique in the area because of its size and groundwater dependence. The basis for the predicted reductions to lake levels and volume (Tables 99 and 100) is unclear, given that both the December 2010 *Final Groundwater Model Development, Calibrations and Predictions Report* (Groundwater Report) and the SDEIS state that the hydraulic characteristics of the major geologic structures which control the groundwater flow system(s) that support Rock Lake and Spring SP-31, a significant source of water to Rock Lake, have not been investigated.

Because lake levels are predicted to decrease in Rock Lake within the Cabinet Mountains Wilderness



Area, the baseline conditions to which littoral zone plants and animals are adapted will likely be affected. The littoral flora and fauna that occupy the perennially inundated nearshore area may no longer receive the same duration of inundation, and it is likely that habitat will be at least seasonally lost. The SDEIS does not identify potential mitigation for these impacts.

*Recommendations for the FEIS:*

- Include more information on groundwater modeling assumptions, uncertainties and data gaps; address the potential for seasonal dry-up of Rock Lake; and refine the model based upon additional data collection prior to the FEIS or during the Evaluation Period. We provide specific comments and recommendations on monitoring in our detailed comments.
- Include a discussion of how the water balance was estimated in order to accurately assess impacts from groundwater drawdown, as well as quantification of the sources of water and seasonal variations in inflow to Rock Lake during operations and post-closure. The 3D modeling incorporates sources of water other than deep groundwater (Table 8, Groundwater Report), but does not provide citations for these values or explain how the water balance was estimated.
- Address the likelihood of and potential impacts associated with dry-up of Spring SP-31.
- Analyze the effects on the lake if there is a groundwater outflow, which would likely be via rock fractures associated with the Rock Lake fault, as concluded and quantified by Gurrieri (2001).
- Quantify the projected lake area lost due to the decrease in the baseline lake level and identify potential mitigation or compensation.

*3. Expansion of Groundwater Dependent Ecosystems Study Area*

Because of the magnitude, duration, and extent of the newly predicted reductions in groundwater level, the Pre-Evaluation and Evaluation phase study of impacts to Groundwater Dependent Ecosystems (GDE) outlined in the SDEIS is especially important. Based on Figure 32, the map of the GDE Study Area, it appears that the GDE Study Area may not have captured all potentially groundwater-dependent areas impacted by the Project, including areas further south and east such as Rock Creek Meadows, the headwaters of the East Fork of Bull River and the East Fork of Rock Creek, as well as springs and wetlands within the study area. It is also unclear to EPA if Rock Lake is entirely captured within this area of study (Figure 32). Evidence suggests that Rock Lake is dependent upon groundwater during periods of the year.

*Recommendation for Pre-Evaluation and Evaluation Phase:* Analyze an expanded GDE Study Area that captures additional potentially groundwater-dependent areas impacted by the Project, including areas further south and east such as Rock Creek Meadows, the headwaters of East Fork of Bull River and East Fork of Rock Creek, springs and wetlands within the study area, and Rock Lake.

*4. Limited Contingency Planning for Water Management*

The SDEIS includes a water balance for average flow conditions; however, flow conditions can reasonably be expected to regularly exceed average conditions. It is important to address how above-average flows from the mine and adit will be handled to ensure protection of soils, surface water and

groundwater. In our June 29, 2009 comments on the DEIS, the EPA stated that a water balance for peak flow rates is necessary to support development of an excess water management contingency plan. Based upon the new information included in the SDEIS pertaining to the water balance, the EPA has identified three potential areas associated with the Project that should be addressed with greater detail regarding high-flow contingency planning.

*Recommendation for the FEIS:* Discuss in more detail how the following parameters will be managed when conditions such as increased inflow due to fracture encounter, or high precipitation and associated infiltration, necessitate their management:

1. Flow to the tailings pond (include a calculation of water storage volume and an emergency overflow design and, if insufficient storage is available for peak flow, discuss the likely impacts should the pond overflow),
2. Flow to and from the treatment plant at varying production rates (include design calculations for the volume of storage in the percolation pond or design for overflow or storage, and discuss whether the treatment effectiveness could be affected by high flow and the associated changes to concentrations of metals in the inflow), and
3. Monitoring and mitigation for flow not captured by the pumpback system (seepage is anticipated although the system has been designed for 100% capture).

#### B. Wetlands

The SDEIS refines the predicted magnitude and extent of groundwater drawdown in the tailings impoundment area, affecting areas where wetlands are present (Figure 72). The SDEIS does not disclose the potential indirect impacts of this drawdown to 14.7 acres of CWA jurisdictional wetlands and 0.31 acres of non-jurisdictional wetlands in the Little Cherry Creek area, north of the Poorman Tailings Impoundment. It also does not address the potential effects of groundwater depletion to wetland and spring systems on the west side of the Cabinet Mountains, particularly the 60-acre Rock Creek Meadow wetland complex. Because all of these wetlands likely depend upon groundwater for a portion of the water that sustains wetland conditions, these groundwater reductions in combination with periods of low precipitation may decrease wetland quality and functional values due to changes in the type of vegetation present and the reduction in the size of the wetland.

Mitigation sites of sufficient quality and quantity to offset both direct (12.2 total acres) and indirect impacts to wetlands may not be available in the Libby Creek watershed where the Project is located. The proposed on-site mitigation sites, the 4-acre "South Little Cherry Creek" site and the 2-acre "Gravel Pit" site, are located within the area of predicted groundwater drawdown. Drawdown is likely to prevent the perpetual establishment of wetland conditions even if additional surface water is provided. Groundwater levels in the Gravel Pit site are predicted to reduce by 20 feet and levels in the South Little Cherry Creek site are predicted to reduce up to 3 feet; pumping, and the associated reductions, could last for decades or more (p. 191).



*Recommendations for the FEIS:*

- Identify and characterize the potential indirect impacts of groundwater drawdown to the 14.7 acres of jurisdictional wetlands and the 0.31 acres of non-jurisdictional wetlands north of the Poorman Tailings Impoundment and the potential effects of groundwater depletion to wetland and spring systems on the west side of the Cabinet Mountains, including the Rock Creek Meadow wetland complex.
- Describe the potential to avoid or minimize the newly identified, potential indirect impacts and the direct impacts to wetlands through the use of paste tailings with surface deposition or dry “stack” tailings with backfill into the mine void. The lower moisture content and reduced impoundment footprint associated with these tailings management options may reduce impacts to wetlands and the amount of groundwater pumping necessary.

C. Surface Water Quality

We are pleased that the aquatic monitoring plan in Appendix K is more detailed and improved over the Appendix C water resources/aquatics monitoring plan included in the 2009 DEIS, but we do identify two recommendations for the plan below.

The SDEIS discloses new flow reduction impacts of the Project that appear to be inconsistent with the State of Montana’s Water Quality Act nondegradation provisions. According to ARM 17.30.705(1), the State’s nondegradation provisions apply “to any activity of man resulting in a new or increased source which may cause degradation.” The SDEIS does not discuss whether the baseflow reductions in the Cabinet Mountains Wilderness from mining activities would meet these applicability criteria.

We continue to have the concern expressed in our DEIS comment letter that the 1992 BHES Order in-stream limit for total inorganic nitrogen (TIN) of 1 mg/l may not be protective of beneficial uses, since the limit is less stringent than MDEQ’s draft numeric nutrient criterion of 0.3 mg/L, which identifies a level to protect against aquatic effects of nitrogen in streams. The SDEIS suggests that it is unknown whether TIN concentrations greater than 0.233 mg/L, and less than 1 mg/L, would increase algal growth to the extent that it would be considered “nuisance” algae.

*Recommendations for the FEIS and ROD:*

- Identify alert levels for particular monitoring parameters, which would trigger follow-up monitoring, investigation, contingency, corrective and/or remedial actions to correct or avoid worsening of a developing environmental problem.
- Include in the FEIS and ROD a similar commitment regarding aquatic monitoring to that in the Rock Creek Mine FEIS and ROD (see p. 13 of Appendix K in Rock Creek Mine FEIS).
- Include a discussion regarding the applicability of the State’s nondegradation policy to the reductions in water quantity in the Cabinet Mountains Wilderness.
- Analyze whether the predicted changes in baseflow, 7Q10 flows, 7Q2 flows, and lake levels may cause degradation.
- Identify which levels of protection would be afforded to waters of the state that lie within the Cabinet Mountains Wilderness.

- In order to enable accurate assessment of beneficial uses, MMC should follow MDEQ's reach-wide sampling method for macroinvertebrates and benthic chlorophyll-*a* samples.<sup>1</sup> This approach ensures the State can evaluate the sites using their existing macroinvertebrate model and correctly compare the data to their thresholds. In addition, we also recommend analysis for increasing chlorophyll-*a* concentrations that may suggest impacts prior to exceedance of the threshold.

#### D. Groundwater Quality

The SDEIS predicts that groundwater quality beneath the tailings impoundment will exceed MDEQ standards and the BHES Order limits for antimony and manganese, and that concentrations of nitrate, metals, and total dissolved solids will increase (p. S-32). It is not clear if any mitigation measures are proposed to address these changes in quality.

##### *Recommendations for the FEIS:*

- Identify the mitigation that has been developed to prevent the predicted exceedances of groundwater quality standards.
- Give further consideration to paste or dry "stack" tailings, which have lower water content than thickened tailings, and would reduce seepage of water into the underlying groundwater (Final Tailings Disposal Alternatives Analysis Report, p. 77), minimizing potential exceedances of groundwater standards and changes to existing quality.
- Describe what impact discharges to groundwater from the tailings pond will have on surface water quality under low-, average- and high-flow monthly conditions.

#### E. Tailings Impoundment Design and Operations

As noted above, the limited mitigation opportunities for the Project highlight the importance of minimizing and avoiding impacts through design and operation changes.

##### *1. Paste Tailings*

The *Final Tailings Disposal Alternatives Analysis Report* indicates that, compared to the tailings management plan in the DSEIS, the use of paste tailings could provide additional environmental benefits beyond the reduction of direct impacts to wetlands, including reduction of the tailings seepage volume. Surface disposal of paste tailings, which is in use elsewhere in the industry, involves removal of more water from the tailings than what is currently proposed prior to storage in a tailings impoundment. It offers potentially significant benefits to surface water quantity and groundwater quality and warrants consideration in the FEIS. Less seepage from paste tailings could represent a significant benefit given the predicted exceedances of groundwater quality due to seepage from the tailings impoundment. Additionally, less seepage may reduce the amount of groundwater pumping and subsequent drawdown around the Poorman tailings disposal site, alleviating predicted streamflow reductions in Poorman, Little Cherry and Libby Creeks and wetlands impacts within the area (p. S-24).

<sup>1</sup> <http://deq.mt.gov/wqinfo/qaprogram/sops.mcp.x>



## *2. Dry Stack Tailings*

The use of dry stack tailings management, in which tailings are dewatered to a lower moisture content than typical paste tailings and then returned to the mine void, could provide more environmental benefits than use of paste tailings. This technology would further reduce the footprint of the impoundment, seepage into groundwater and the need to pump and recapture groundwater. Because this option would eliminate or reduce the size of the surface tailings impoundment, it would necessitate change to water management. Dry stack tailings management is in use elsewhere in the mining industry.

A belt conveyor could introduce dry stack tailings into the mine. Underground space could be excavated near these conveyors for storage of the dry tailings until they could be distributed into the mined-out rooms with trucks and front-end loaders. The belt conveyor could be designed to be reversible, enabling it to transport dry tailings back underground. This technology would avoid the high costs of pumping and pipelines. It would require an additional filtration plant and equipment on the surface to dewater the mill tailings to a lower moisture content than typical paste tailings. This additional surface plant and equipment cost could be offset by eliminating paste tailings pumping costs.

*Recommendation for the FEIS:* More fully evaluate and disclose the potential environmental benefits and feasibility of paste tailings surface deposition and dry “stack” tailings with backfilling and consider these measures as potential components of the preferred alternative.

## **Conclusion and Rating**

EPA’s official comments on this EIS include the comments provided above, as well as the enclosed Detailed Comments document. We have provided comments on water quantity, water management, aquatic life, wetlands, water quality, groundwater quality, air quality, tailings impoundment design and operations, monitoring and adaptive management, mitigation and additional information for disclosure.

Based on the information presented in the SDEIS, the EPA is concerned that Alternative 3, the Agency Mitigated Poorman Impoundment Alternative, is projected to cause significant direct and indirect impacts on aquatic resources regulated by CWA §404. Specifically, this preferred alternative may cause or contribute to significant degradation of waters of the U.S., including significant adverse effects on aquatic ecosystems diversity, productivity and stability (40 CFR 230.10(c)(3)). The extent of these impacts has not been fully evaluated at this time. It is possible that additional studies could be completed to provide information for full evaluation during the Section 404 permit compliance process.

Consistent with Section 309 of the Clean Air Act, it is the EPA’s responsibility to provide an independent review and evaluation of the potential environmental impacts of this Project. The EPA’s rating is for the preferred action alternative only. Based on the procedures the EPA uses to evaluate the adequacy of the information and the potential environmental impacts of the proposed action, the EPA is rating this DEIS as “EO-2” (Environmental Objections-Insufficient Information). The “EO” rating means the EPA identified environmental impacts to aquatic life, streamflow, groundwater, wetlands, and



water quality that should be avoided or minimized in order to adequately protect the environment. The "2" rating signifies that the SDEIS does not contain sufficient information for the EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment. A full description of the EPA's EIS rating system is enclosed. As we have communicated above, the EPA is committed to working with you in the coming months, while the FWS prepares the Biological Opinion for the Project, to better understand the flow-related issues and identify potential measures to avoid, minimize or reduce impacts, before issuance of the FEIS and ROD.

The EPA appreciates the opportunity to provide comments. If we may provide further explanation of our comments, please contact Suzanne Bohan at (303) 312-6925.

Sincerely,



Carol L. Campbell  
Assistant Regional Administrator  
Office of Ecosystems Protection  
and Remediation

Enclosures

cc: Lynn Hagarty, Kootenai National Forest  
Kristi Ponozzo, Montana Department of Environmental Quality  
Martha Chieply, U.S. Army Corps of Engineers, Omaha District  
Jim Winters, U.S. Army Corps of Engineers, Omaha District





ATTACHMENT  
EPA's Detailed Comments  
Water Quantity, Aquatic Life, Wetlands, Surface Water Quality,  
Air Quality and Additional Comments  
Montanore Project Supplemental Draft EIS

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**Water Quantity**

***Groundwater modeling***

Given the magnitude of predicted groundwater and baseflow reductions disclosed in the SDEIS and the incomplete characterization of hydrology, the EPA is providing the following recommendations for collecting additional field data and supplementing the hydrologic assessment of the site.

*Recommendations:*

*Mine Void Area* - The EPA recommends the FEIS and ROD reflect the intent of the DEIS to refine the groundwater model during the Pre-Evaluation and Evaluation Phase to confirm the 3D model's predictions and reduce uncertainty. We also recommend collection of the following data during the Pre-Evaluation Phase:

- Flow data and head data for springs SP-31, SP-32 and SP-16
- Data to characterize the hydraulic characteristics of the Rock Lake fault where it outcrops
- At least one piezometer should be installed in the fault above Rock Lake
- Water samples 3 to 4 times over the annual hydrograph for stable water isotopes (oxygen-18, deuterium) and tritium analysis from: East Fork Bull River, East Fork Rock Creek, Rock Lake, St. Paul Lake and Rock Creek meadows.
  - These data, along with flow and head data, would be useful for determining the source(s) of water to the streams, lakes, and wetlands.

*Tailings Impoundment Area* - We understand that nested piezometers were installed in 2011 and recommend that the water level and isotopic data from the nested piezometers be incorporated into the hydrologic assessment of the site either at the FEIS stage or during the Evaluation Phase. To fully characterize the tailings impoundment area hydrology, we recommend the following:

- Determine vertical gradients around the impoundment as it appears to be a groundwater discharge area.
- Verify possible existence and extent of the high hydraulic conductivity alluvial valley beneath the impoundment footprint (p. 244). If present, contaminated groundwater could discharge from this channel into Libby Creek. It is important to understand if this buried channel exists and if it is connected to Libby Creek for post-closure monitoring of the impoundment.
- Develop a water table map for the Poorman tailings impoundment area.

#### *Other Recommendations:*

- Page 252: Address in the FEIS and ROD the intent to conduct monitoring of springs on Rock Lake fault two times per year instead of one time per year. Monitoring twice per year (once as soon as the site is accessible in the early summer and once in late summer/early fall) allows for evaluation of seasonal differences.
- Page 298: Provide the total uncertainties in estimated percentage change for 7Q10 and 7Q2 flows in Table 102 to characterize the range of possible flows.
- Section 3.10: Use the term “regional potentiometric surface” or “saturated zone” instead of “water table” to more accurately represent this hydrogeologic situation.
- Page 232: Provide the hydrostratigraphic unit for the hydraulic conductivity values.
- Page 232: Explain infiltration of 14% if there is an upward gradient.

### **Aquatic Life**

#### ***Dewatering***

The SDEIS states: “Without mitigation, the effects on habitat in upper East Fork Rock Creek would be substantial and last for hundreds of years (p. 139).” However, the SDEIS states “Implementation of this mitigation [grouting] during the Operations Phase would result in minimal improvement in the predicted baseflow changes.” Moreover, the SDEIS describes mitigation effectiveness as decreasing and then becoming highly uncertain over 50 to 100 years (p. 253), a fraction of the 1,172 to 1,322 year period over which stream baseflow will be impacted (footnote to Table 89).

*Recommendation for the FEIS:* Clarify that even with mitigation, temporary and permanent baseflow reductions are large and long-lasting enough that substantial adverse impacts to aquatic life will occur.

#### ***Flow Fluctuation***

The SDEIS states that Libby Creek flows below the adit site will increase and decrease depending upon the mining phase (i.e., 79% increase in the construction phase, 18% decline in the operations phase, 75% increase in the closure phase and 34% increase in the post-closure phase). While the SDEIS states that the additional flows will provide more thermal refuge areas as well as deeper pool areas, the document does not address the potential adverse impacts on aquatic life of these types of flow fluctuations. These types of successive flow changes can affect the structure and composition of aquatic communities in numerous ways, including increasing macroinvertebrate drift and altering the relative abundance of sensitive and tolerant species. Increases in Libby Creek flows can affect channel and bank stability and increase channel and bank erosion. Mitigation for these effects could include discharge/flow management to mimic a more natural flow regime or stream restoration and enhancement. The FWS also mentioned these concerns in its November 15, 2011 letter.

*Recommendation for the FEIS:* Include a discussion of potential effects of Libby Creek’s fluctuating flows on aquatic life.



## ***Sediment***

Impacts from sediment could exacerbate impacts to aquatic life especially when considered in combination with the newly disclosed changes to flow in Libby Creek. As stated in the SDEIS, many of the streams in the Libby Creek watershed will experience increases in sediment, which will likely adversely affect aquatic biota, including macroinvertebrates, bull trout and other fish species (pp. 135, 152). Increases in sediment can lead to substantial adverse physical habitat effects, including fine sediment deposition in spawning and incubation areas and filling of interstitial habitats for macroinvertebrates. Because Libby Creek and Little Cherry Creek are approaching or exceeding the 30% threshold for fine sediments in spawning and incubation areas (p. 135), it is likely that any additional sedimentation will have deleterious effects on physical habitat for the threatened bull trout and other salmonids. The SDEIS indicates that increased sediment loading would be greatest during the construction phase when trees, vegetation, or soils will be removed for mine facilities, roads and the transmission line. Roads will likely be a relatively large, ongoing source of sediment post-construction. The FWS also mentioned these concerns in its November 15, 2011 letter.

*Recommendation for the FEIS:* Include a discussion on location of roads, the timing of construction and the associated potential effects on spawning and incubation periods of the resident or migratory fish species.

## ***Threatened and Endangered Species***

The EPA concurs with the FWS November 15, 2011 comments, and defers to FWS regarding the impacts of the Project on Endangered Species Act listed species and on additional opportunities to avoid, minimize, and compensate for these impacts.

## **Wetlands**

### ***Indirect Impacts***

Based on the new information provided in the SDEIS, EPA has identified wetlands in the Little Cherry Creek area likely to be affected by reductions in groundwater levels (see Table 1 below).

*Recommendation for the FEIS:* Evaluate the effects of groundwater level reductions associated with pumpback wells on the wetlands in the Little Cherry Creek area, as well as other waters of the U.S.

Table 1. Wetlands impacted by Poorman Creek Groundwater drawdown		
Wetlands--Jurisdictional	Acres	Rating
LCC-39A	5.27	III
LCC-36	2.47	III
LCC-38	0.05	III
LCC-35A	1.63	III
LCC-35B	1.62	III
LCC-35C	0.08	III
LCC-29	2.65	III
LCC-30	0.05	III
LCC-33	0.22	III

LCC-21	0.09	III
LCC-26	0.36	IV
LCC-27	0.08	IV
LCC-28B	0.07	IV
LCC-28A	0.06	IV
<b>Sub-total, jurisdictional</b>	<b>14.70 acres</b>	--
<b>Wetlands--Non-Jurisdictional</b>	<b>Acres</b>	<b>Rating</b>
I-13	0.05	--
I-07	0.05	--
I-08	0.21	--
<b>Sub-total, non-jurisdictional</b>	<b>0.31 acres</b>	--
<b>Total wetland acres</b>	<b>15.01 acre</b>	--

### ***Wetland Mitigation and Executive Order 11990 Protection of Wetlands***

The SDEIS states "In compliance with [Executive Order] 11990, the KNF finds that there is no practicable alternative to new construction located in wetlands, and that Alternative 3 includes all practicable measures to minimize harm to wetlands (p. 414)." The EPA does not agree that all measures have been incorporated into Alternative 3 that would reduce the direct and indirect impacts to wetlands. There are significant benefits associated with use of paste tailings with surface deposition or dry "stack" tailings backfill and/or surface deposition. In addition, indirect impacts to wetland systems adjacent to the Poorman Waste Disposal site, in the East Rock Creek watershed and in the East Fork Bull River watershed were excluded from consideration for compliance with this executive order.

*Recommendation for the FEIS:* Address all potential indirect impacts to wetlands and explain how the KNF will comply with Executive Order 11990.

### **Surface Water Quality**

Table 106, Section 3.13.4.2.1 (p. 323) presents the predicted water quality concentrations for Alternative 2, but there is not a comparable table for the preferred alternative, Alternative 3. Without a table documenting the predicted water quality changes, it is difficult to evaluate whether or not the predicted impacts to Libby Creek would be significant for the preferred alternative.

*Recommendation for the FEIS:* Include a table that presents the predicted water quality concentrations for Alternative 3 so the predicted water quality impacts associated with the preferred alternative are clear.

### ***Water Treatment***

The SDEIS acknowledges the possible addition of a wastewater treatment unit for nitrogen and that, dependent upon monitoring results and under certain conditions, water treatment may be necessary for all water discharged from the mine site.

*Recommendation for the FEIS:* Address whether the proposed water treatment processes (a biological nitrification-denitrification treatment system, ultrafiltration and perhaps chelation or reverse osmosis)



can meet the more stringent nitrogen limits (i.e., 0.3 mg/L TN), if periphyton and chlorophyll-*a* monitoring provide evidence that effluent limits for nitrogen need to be tightened. If the proposed water treatment process cannot meet the tighter nitrogen limits, we recommend the FEIS propose alternative treatment options that will meet the lower nitrogen limits.

### ***Clean Water Act Section 303(d)-Listed Streams and TMDL Consistency***

Project activities have potential to aggravate habitat alternations and sedimentation/siltation CWA §303(d) impairments in Libby Creek (p. 306), further adversely affecting the aquatic life and cold water fishery uses that are already impaired in the downstream Libby Creek segment. The SDEIS identifies some best management practices (BMPs) that could offset sediment impacts of the project, but does not relate these to the sediment-related CWA §303(d) impairments in Libby Creek.

*Recommendation for the FEIS and ROD:* Identify mitigation measures to ensure the Project will avoid further degradation of Libby Creek and be consistent with total maximum daily loads (TMDLs) and water quality improvement activities to restore full support for beneficial uses in Libby Creek. Monitoring and adaptive management may be necessary to prevent further degradation and demonstrate consistency with TMDLs once developed.

### **Air Quality**

#### ***Criteria and Hazardous Air Pollutants (HAPs)***

The EPA is pleased that the Supplemental Appendix C, Agencies' Conceptual Monitoring Plans, C.2 Air Quality contains provisions for air monitoring at three air monitoring stations for PM<sub>2.5</sub>, PM<sub>10</sub>, and related HAPs. The SDEIS also contains information on compliance with the New Source Performance Standard (NSPS) 40 C.F.R Part 60, Subpart LL; more complete HAPs modeled results with comparisons to HAP reference thresholds; and, a modeled demonstration of compliance with the new 1-hour NO<sub>2</sub> and SO<sub>2</sub> National Ambient Air Quality Standards.

The SDEIS compares HAP air impacts from the mine to HAP thresholds. The total combined cancer risk from arsenic, cadmium, and chromium associated with the loadout facility is 1 in 1,000,000 using a 20-year exposure period. The total lifetime exposure risk of 1.3 (Table 51) is very near the acceptable risk of one in a million.

*Recommendation for the FEIS:* Include a discussion to better explain the modeled results, lifetime risk associated with this risk assessment, and how HAP related PM<sub>10</sub> air monitoring may provide data to better understand this risk.

### **Additional Comments and Recommendations**

#### ***Monitoring and Adaptive Management***

##### ***1. Pre-Evaluation & Evaluation Phase Data***

Because available information on the potential for metals release specifically for the Montanore Project

is limited, the interagency workgroup on geochemistry agreed to the use of geological analogs of the Troy Mine and the Rock Creek Mine with validation through site-specific monitoring during the evaluation phase of the Project.

The SDEIS and the EPA acknowledge that data to support the hydrologic modeling are limited and also acknowledge the need to collect additional data. The EPA supports additional hydrologic data collection efforts.

The EPA requests to be part of the technical review process for final design review for the Poorman disposal site (p. 48).

*Recommendations for the FEIS and ROD:*

- Include more detail on how site-specific monitoring data from the waste rock test pad and waste rock column test will be used to decide if the waste rock stockpile at the Poorman tailings site will be lined to ensure that water quality standards will be met.
- Include more detail on how hydrologic information gathered during the Pre-Evaluation and Evaluation Phases will be used to refine predicted impacts.
- Discuss how the geochemical and hydrologic information assembled at the end of the Evaluation Phase will be reevaluated and shared with the public and the EPA to provide the opportunity to assess potential impacts and recommend revisions to mitigation if necessary.

***Additional Information for Disclosure***

We note that the Final 3D Groundwater Model dated April, 2011; the 2011 Final Surface Water Quality Report; and the Response to EPA Comments, Attachment A – Response to Montanore DEIS Comments Regarding Visibility dated June 30, 2009 were not provided as appendices to the SDEIS.

*Recommendation for the FEIS:* Make these reports available as appendices or provide links to on-line availability.

***Production Rate Implications***

The Final Tailings Disposal Alternatives Analysis recognizes that the predicted 20,000 tons per day, 16-year full production rate is optimistic but does not explain the implications of an optimistic production rate for environmental impacts, including waste and water management (p. 239).

*Recommendation for the FEIS:* Describe why the predicted rate may be optimistic and discuss its implications.



## **U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements**

### **Definitions and Follow-Up Action\***

#### **Environmental Impact of the Action**

**LO -- Lack of Objections:** The Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

**EC -- Environmental Concerns:** The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

**EO -- Environmental Objections:** The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

**EU -- Environmentally Unsatisfactory:** The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

#### **Adequacy of the Impact Statement**

**Category 1 -- Adequate:** EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

**Category 2 -- Insufficient Information:** The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new, reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

**Category 3 -- Inadequate:** EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

\* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

